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NOTES ON AMERICAN WATER-STRIDERS.

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This paper contains notes on seven species of American water-striders, four of which are described as new to science. The writers are indebted to Mr. B. L. Ribeiro of Brazil for collecting the specimens from Brazil. The types are in the collection of the authors.

*Microvelia pudoris*, n. sp.

Very similar to *M. summersi* D. & H. in color, but much more slender. Antennae dark brown; segment I stout, enlarged towards apex; II much more slender and shortest; III most slender and slightly longer than II; IV shorter than II and III united, tapering from beyond middle to apex. Head brown, moderately convex above, with a longitudinal median impressed dark line. Eyes large, dark, coarsely faceted. Pronotum (winged form) brown, with a transverse spot in front and the posterior margin of triangular portion, flavous; humeri prominent, impressed within. Hemelytra brown, the nervures not prominent. Rostrum testaceous, extending beyond anterior coxae. Body beneath dark brown. Legs slender, rather short, yellowish-brown. Last venter in male broadly roundly excavated, the genital segments very small and mostly concealed in the abdomen.

Length, 1.32 mm.; width, .60 mm.

*Holotype* (male), *allotype* (female), and 4 *paratypes*, all winged, Grenada, B. W. I., collected by H. E. Summers.

Very similar in color to *M. venustatis* D. & H. but much more slender and with a much longer apical antennal segment.

*Microvelia sarpta*, n. sp.

*Apterous*: Elongate, narrow, flattened, yellowish-brown. Head sloping from midline to either side, with a short median streak and three elongate spots on each side, brown. Antennae dark brown, long, slender; segment I paler at base, considerably stouter than II, slightly curved, nearly one and a half times as long as II; III and IV very slender; III nearly as long as I and II conjoined and one-fourth shorter than IV. Pronotum long,

obliquely narrowed on each side and excavated behind; transversely impressed a little behind the anterior margin, the impression interrupted at the middle by a triangular keel, distinctly punctate. Mesonotum and metanotum about equal in length, together a little longer than pronotum. Intermediate legs with the femora very strongly incrassate and blackish. Venter flat, yellowish-white, with a large blackish spot at the base, the last segment very long, as long as the preceding two, truncate behind. First genital segment beneath very deeply roundly excavated behind, the second segment long, with a strong finger-like projection on each side. Genital segments above dark brown, hairy, first segment much broader, rounded on each side, the second segment narrow, digitiform.

Length, 2.2 mm.; width, 0.62 mm.

*Holotype*, apterous male, collected in a small lake, Butantan, Sao Paulo, Brazil, Aug. 18, 1935.

The long terminal antennal segment, the enormously swollen femora of middle legs, and the peculiar genital segments separate this species at once from other *Microvelia*.

*Xiphovelia diffidentis* (D. & H.).

Many wingless males and females, Santos, Sao Paulo, Brazil, taken from river flowing into the ocean, Aug., 1935. The species and the related *turmalis* (D. & H.) from Honduras appertain to the genus *Xiphovelia* Lundblad. This is the first record of this genus in the Western Hemisphere.

*Rhagovelia varipes* Champion.

*Rhagovelia varipes* Champion, Biologia Centralia-America, Rhynchota, II, 1898, pp. 133, Pl. VIII, fig. 22.

*Rhagovelia beameri* Gould, Univ. Kans. Science Bull., Vol. 20, 1931, p. 18.

*Rhagovelia varipes* Gould, *ibid*, p. 46.

The type specimen, belonging to the Vienna Museum bearing the date, "Bilimek, Mexico. 1871. B.C.A. Rhyn. II. *Rhagovelia varipes* Ch. ♂. Type, Sp. figured," has been loaned to us for study through the courtesy of Dr. Max Beier. This type does not differ from paratypes of *R. beameri* Gould. The writers have long series of specimens taken from the streams of Arizona, New Mexico, and Mexico. The type agrees very well with Champion's description except in the matter of the length of the tarsal segments of the intermediate legs, the last segment being faintly longer than the preceding.

*Rhagovelia becki*, n. sp.

*Apterous male*: Long, slender, black, with a bluish luster, the margins of connexiva and basal portion of first antennal segment yellowish-brown. Eyes reddish-brown. Antennae long, slender; formula, 55 : 33 : 24 : 23. Rostrum stout, reaching to apex of front coxae. All acetabula and trochanters and both anterior and hind coxae yellowish-brown, the intermediate coxae blackish. Front trochanter armed beneath a little before the apex with a conspicuous spine-like spur, hind trochanter with a few

black spines. Intermediate legs in proportion—femora, tibia, tarsal II and tarsal III=110 : 80 : 45 : 47. Anterior tibia not strongly widened distally. Hind femora moderately incrassate, reaching to base of first genital segment, armed within with a long curved black spine a little before the middle, thence to apex with a row of 8 or 9 progressively shorter spines, also with a row of minute spines from base to middle and a second row from there to apex. Hind tibiae nearly straight, with stout spines within and a strong spur at apex.

Pronotum faintly longer than broad, with a low median keel, very coarsely punctate, the hind margin rather sharply rounded. Connexiva nearly vertical. Venter tapering posteriorly, the last segment broadly flattened behind, with a ridge along each side of the flattened portion, the hind margin spinose.

First genital segment strongly constricted beneath near the base, there ridged along median line; above very long, cylindrical. Second segment from above shorter, tapering to apex.

*Apterous female*: Antennae about as in male. Pronotum a little broader than in male, very similar in shape, beset within the hind border with very long, dark, semierect seta-like hairs. Connexiva more sharply reflexed and more widely margined with yellowish-brown than in male, narrowing posteriorly, each produced behind into a long, pointed, hairy process. Abdomen above greatly narrowed on last four segments, the hind margin of last segment with two irregular tufts of long hairs. First genital segment above with a tuft of long dark hairs on each side. Anterior trochanters unarmed. Intermediate femora slightly flattened. Last venter longer than preceding, shiny. Hind femora scarcely more incrassate than intermediate, armed within before apical third with a long spine, from there to apex with a few short spines.

Length, 5.11 mm.; width, 1.3 mm.

*Holotype*: apterous male, and *allotype*, apterous female, Sabinas Hidalgo, N. Leon, Mexico, June 17, 1934, collected by Dr. D. E. Beck. *Paratypes*, 3 males taken with types and 24 males and females, Reagan Wells, Texas, March 6, 1936, collected by M. J. James.

The elongate form, characters of the pronotum, male genital segment and last segment of abdomen and connexiva of female serve to separate this species from all known *Rhagovelia*. The male claspers are short and of the general type of *distincta* Champion.

#### **Halobatopsis spiniventris, n. sp.**

Moderately large elongate-ovate, prominently marked. Head above black; with an irregular yellowish line on each side, these widening anteriorly and contiguous in front, joined at base with a short transverse line. Eyes large, dark. Rostrum becoming black distally, reaching considerably beyond apex of front trochanters. Antennae long, brownish-black; segment I stoutest, slightly enlarged distally, moderately curved near base, almost twice as long as II; II about one-third shorter than III; IV subequal in length to III.

Pronotum short, nearly twice as broad as long, indistinctly emarginate

at the middle behind, with conspicuous, somewhat anchor-shape yellowish marking. Mesonotum longitudinally impressed on each side, blackish with a broad yellow stripe on each side of median line extending from near the anterior margin almost to the base and then curved outward so as to form a J-shaped figure; a broad yellow stripe with silvery sheen on each side. Metanotum with a small yellowish spot on each side of middle. Abdomen black, with a more or less bluish luster; an irregular longitudinal spot at the base, a transverse spot on last tergite, yellowish. Connexivum with a large yellowish spot on each segment, the margins black. Body beneath yellowish. Legs long, black; the anterior femora with a basal streak and a spot at the apex, yellowish.

*Male:* Last segments of venter about as long as the three preceding. First genital segment beneath deeply roundly excavated behind, impressed within, with a very long brownish-black shiny blunt spine projecting posteriorly beneath the second genital segment; second segment tumid, blackish. First genital segment above roundly notched at the middle, yellowish, the hind margin dark. Anterior femora stout, rather strongly curved.

*Female:* Connexiva reflexed, the outer margin curved, with a patch of long hairs on the fifth segment. Hind femora beneath with a few long hairs along the basal portion. Front femora curved but not quite as stout as in male.

Length: 3.65–4.05 mm.; width 1.38–1.95 mm.

*Holotype* (apterous male), *allotype* (apterous female) and *paratypes* (apterous male and female) Guarajo, Sao Paulo, Brazil.

The very long spine on the first genital segment of the male distinguishes this species at once from any related form. In general aspect the female resembles members of the genus *Trepobates*.

*Rheumatobates crassifemur esakii* Shroeder.

*Winged form:* Velvety black, in front with a large transverse flavous spot, somewhat plumbeous on each side of this spot, behind margined with yellowish, narrowed in front, the front lobe faintly impressed and rather sharply defined; hind lobe tumid, distinctly impressed within the humeri, broadly rounded and margined with yellowish-brown behind. Hemilytra much longer than abdomen, smoky, the basal portion in front of transverse suture whitish and with strong, dark fuscous veins; a distinct white transverse line marking the point of fracture and another similar colored median longitudinal line extending from this line to apex.

Numerous wingless and winged males and females, collected in a small lake, Jundiacy, Sao Paulo, Brazil, Aug. 25, 1935.